Nova Scotia

ANNUAL REPORT

for the fiscal year
ending March 31, 1988

Department of the Environment

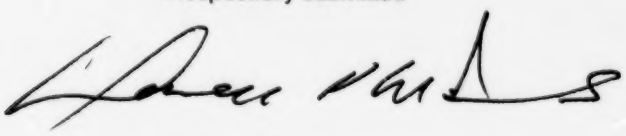
89-04936/

The Honourable Alan R. Abraham, C.D.
Lieutenant Governor
Province of Nova Scotia

May It Please Your Honour:

The undersigned has the privilege to present to your Honour the Annual Report of the Nova Scotia Department of the Environment for the fiscal year ending March 31, 1988.

Respectfully submitted



Donald P. McInnes
Minister of the Environment

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Minister of the Environment
Province of Nova Scotia

Sir:

I have the honour to present to you the Annual Report of the Nova Scotia Department of the Environment for the fiscal year ending March 31, 1988.

Respectfully submitted

Armand F. Pinard
Deputy Minister

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PURPOSE AND OBJECTIVES

The Department of the Environment was established fifteen years ago as the agency of the Nova Scotia Government with the responsibility for protection and conservation of our natural resources. These resources include: forests and farmlands, lakes and streams, the quality of air and the responsibility to safeguard citizens from polluting agents or conditions.

Under provisions of the Environmental Protection Act, the Minister is responsible for the supervision and control of management, preservation, and protection activities to conserve and make efficient use of renewable resources.

The Department of the Environment encompasses four divisions: Administration, Environmental Assessment, Field Services, and Utilities.

The Department administers six provincial statutes:

—The Environmental Protection Act
—The Water Act
—The Well Drilling Act
—The Beverage Containers Act
—The Dangerous Goods & Hazardous Wastes Management Act
—The Pest Control Products Act

Environmental Protection Act—Assigns to the Department of the Environment, overall responsibility for the protection and enhancement of the environment and the conservation of natural values.

Water Act—Provides a mandate for the control and supervision of all watercourses, including their use, allocation, alteration, or pollution. The Act specifically provides department responsibility for approving all water rights applications in Nova Scotia.

Well Drilling Act—Provides control standards for well construction and for the management and protection of well-water resources. The Act also provides for the protection of consumers using the services of well construction companies. The Act allocates to the department responsibility for licensing well drillers in Nova Scotia and for inspection of dug and drilled wells.

Beverage Containers Act—This Act was designed to discourage littering

of beverage containers and to further their re-use.

Dangerous Goods and Hazardous Waste Management Act—This Act applies to the handling of dangerous goods for any purpose, and the handling of hazardous waste by the person responsible for it. It requires that people responsible for such materials must report to the Minister the location, approximate quantities, the reasons such materials are being held, and precautions observed to ensure safe handling and storage.

Pest Control Products Act—The intent of this Act is to prevent pollution from occurring during any stage in the life cycle of a pesticide. It provides for a licensing system, a permit system, and regulations on the use, storage, and handling of such substances.

The Department of Environment's main office is in Halifax at 5151 Terminal Road, (Telephone no. 424-5300).

There are six field offices:

Yarmouth	742-8985
Middleton	825-6246
Pictou	396-4194
Truro	895-9266
Port Hawkesbury	625-0791
Sydney	539-8515

1987–88 Highlights

During the 1987–88 fiscal year a number of Bills were introduced in the Nova Scotia Legislature. Four Bills would see increased penalties for offenses committed under various Acts. The Bills increase the maximum penalty for a first offence from $5,000 to $50,000 or, in default, one year in jail. They also increase the penalty for a second or subsequent offense from $10,000 to $75,000 or, in default, two years in jail. If granted legislative approval during this sitting of the legislature, the amendments would affect the following Acts:

The Water Act

The Pest Control Products Act

The Dangerous Goods and Hazardous Waste Management Act

The Environmental Protection Act

Other Bills introduced during this sitting of the legislature allow for the following:

The Clean Nova Scotia Foundation Act

If given approval, this Act would formally establish the Clean Nova Scotia Foundation, making it independent with strong government and public support.

Environmental Assessment Act

An Act intended to provide for public consultation on significant projects which may have an impact on the environment. The Act would also allow for review of the project when still in the designing stages, thus saving money and time.

The Derelict Vehicles Act

This Bill would establish an Act allowing for the collection and removal of derelict vehicles throughout Nova Scotia. If given Royal Assent the legislation would make a derelict vehicles program a mandatory function of the Nova Scotia Department of the Environment.

Other highlights of the 1987–88 fiscal year were:

Pesticides

The Pest Control Advisory Committee started a public review of proposed pesticide regulations to be included in the Pest Control Products Act. This review was conducted with assistance from Nova Scotia Department of the Environment.

Underground Storage Regulations

These regulations were announced by the Minister near the end of the fiscal year following an extensive review. The regulations established a licensing system for owners of underground storage tanks. Once a complete inventory of such tanks is completed, recommendations regarding replacement of the tanks can be made.

Acid Rain

The federal and provincial governments signed an Acid Rain Agreement during the fiscal year. The agreement calls for Nova Scotia to reduce overall acid rain emissions to a 1994 objective of 204 thousand tonnes. Industries throughout Nova Scotia will be reporting their sulpher dioxide emissions to the Nova Scotia Department of the Environment on a monthly basis to ensure that this objective is being met.

Sydney Tar Ponds

Acres International was hired as project manager for the clean-up of the Sydney Tar Ponds. As soon as the contract was signed, work began on planning for the clean-up operation which will involve excavation of the site and eventual incineration of the contaminated material.

Hazardous Waste Task Force

The Hazardous Waste Task Force completed its report following public hearings throughout the province. The Minister then released the report to the public. The 51 recommendations contained in the report have been approved in principal by Cabinet and the Nova Scotia Department of the Environment is working very hard to implement them. One event which arose out of the recommendations was the establishment of a Hazardous Waste Management Section within the department. This section will be responsible for implementation of the recommendations.

Abandoned Site

The department released its Abandoned Waste Disposal Site Study to the public. The study identifies abandoned landfill sites, mine tailings, etc., throughout Nova Scotia and prioritizes them. Staff in the department then began working on further testing of the sites identified in the report to see if any remedial action is necessary.

Pilot Recycling Project

During Environment Week, the department carried out a Pilot Recycling Project in the province. Response to the project was very encouraging. Locations for depositing aluminum cans and bottles were set up all over Nova Scotia.

Litter Abatement Task Force

The Minister established this Task Force to hold public hearings throughout the province. The Task Force will hear submissions on litter abatement and review the Beverage Containers Act. It will report to the Minister its findings in 1988.

ENVIRONMENTAL ASSESSMENT DIVISION

The Environmental Assessment Division, the largest operating division in the department, has two main areas of responsibility. First, it is responsible for reviewing and assessing individual, municipal, industrial and government undertakings for their environmental acceptability, including enforcing permit terms and conditions under the Environmental Protection Act. Secondly, the division has the responsibility for provincial water resource management including enforcement under the Water Act. The objective is to promote optimal development and protection of this resource.

This division also includes the Canada-Nova Scotia Flood Damage Reduction Program and advisory services for departmental policy development.

The division is divided into five sections to carry out its programs: Waste Management, Engineering Construction and Government Programs, Environmental Development, Water Resources Planning, and Water Management Sections.

Waste Management Section

This section has two major areas of responsibilities:

Solid and Hazardous Waste Management—provides technical assistance and advice to municipalities and industry on acceptable methods for disposing of solid and hazardous waste, and provides grants to municipalities for planning solid waste management systems.

Industrial Pollution Control—provides an industrial pollution review program and assistance to industry with an evaluation of proposed pollution abatement facilities, and ensures that industry complies with permit requirements.

Major Program Activities & Highlights

(i) *Sydney Tar Ponds Clean Up*—On June 3, 1987 Acres International Ltd. was selected as Project Manager for the Clean-Up Program and work commenced on June 8. A project directive of "maintaining a fast-track to incineration" was issued and is based on the recognition that the incineration component is the key determinant of the satis-

factory destruction of PAH contaminated sediments and the overall economics of the project.

(ii) *Minister's Task Force on Hazardous Waste Management*—During the fiscal year, the Minister's Task Force on Hazardous Waste Management submitted its final report, and all 51 recommendations were accepted by the province for implementation.

Highlights of the Task Force included:

1. A process for defining dangerous goods and hazardous wastes under the Dangerous Goods and Hazardous Waste Management Act

2. A process for establishing a hazardous waste transfer facility (or facilities) for the secure, temporary storage of hazardous wastes prior to transporting to disposal facilities in other jurisdictions

3. The formation of a Working Group to define the role of local fire services in emergency response situations and the creation of a small provincial emergency response team

4. A licensing system for persons generating, transporting or disposing of a designated hazardous waste

5. A prohibition on the storage of a designated hazardous waste for periods in excess of one year

6. A manifest system for the transportation of hazardous wastes to ensure their secure, final disposal

7. An investigation of hospital incineration facilities

8. Regulations respecting the use and disposal of contaminated waste oil

9. The release of the Abandoned Waste Disposal Site Study

10. The appointment of a co-ordinator within the Department of the Environment for dangerous goods and hazardous waste management.

In response to the Task Force Report the department established the Hazardous Wastes Management Section within the Field Services Division; the major responsibilities of the section are to:

—Administer the Dangerous Goods and Hazardous Wastes Management Act

—Implement the recommendations of the Minister's Task Force on Hazardous Wastes Management

—Maintain and co-ordinate responses to environmental emergencies

—Inspect solid waste management facilities

In compliance with #8 above (Regulations respecting the use and disposal of contaminated waste oil) draft regulations were circulated for public examination and comment.

(iii) *Cape Breton Development Corporation*—Work continued on the assessment and development of waste management control strategies for the Phalen coal mine, the Selminco coal recovery plants in Sydney Mines and New Waterford, and an effluent control at Victoria Junction.

(iv) *Rio Algom Ltd.*—An Industrial Permit was issued to Rio Kemptville Tin Corporation and negotiations successfully completed with the parent company in collaboration with the Departments of Mines and Energy and Lands and Forests to provide financial and reclamation guarantees for the tin mine formerly owned by the Bank of America consortium.

(v) *Suncor-Westray*—Work continued on the assessment and development of control strategies for a 900,000 tonne per year coal mine near Stellarton.

(vi) *Mining-General Activities*—Procedural guidance was extended to a number of companies involved in mineral exploration and development activities during the year.

Engineering Construction and Government Programs Section

This section ensures that environmental concerns are incorporated into planning and construction of proposed land developments, such as the installation of water and sewer and treatment facilities.

Environmental Development Section

This section has three major areas of responsibilities. These include pesticide management, environmental review and environmental studies.

Pesticides Management—The principal components of this program are: to develop and implement legislation; to oversee operation of the Pest Control Products Advisory Committee; review of permits for pesticide spraying; operational and post-operational monitoring and training, educational programs and development of licensing systems for the pesticide industry.

During the fiscal year ending March 31, 1988, 306 pesticide use applications were received, 262 were approved, there was one rejection, and thirty-four were recalled by the applicant. Nine were left on file.

Future emphasis will be on the development and application of a licensing system for the pesticide industry. Training programs and examination schedules will be an integral part of this system. Emphasis will also be placed on the development of a voluntary pesticide user certification program for the agriculture sector.

The Pest Control Products Advisory Committee held one meeting which resulted in several recommendations to the Minister. During the year, additional members and nominations have been requested for all remaining positions.

The Pest Control Products Advisory Committee inaugurated a public review of the draft regulations proposed for the Pest Control Products Act. Newspaper advertisements were placed throughout the province stating that the draft regulations were available for public review and that the Committee welcomed written submissions. More than 600 information kits on the draft regulations were distributed and the Committee received 73 written submissions. The Committee will be conducting a review of the submissions and will then prepare recommendations on regulations for consideration by the Minister. The Committee will also be identifying topics for review during the following year.

Environmental Review—This includes reviewing potential environmental impacts of proposed development and commercial undertakings by the private sector, federal and provincial government agencies. Recommendations are made to government respecting their environmental suitability and what modifications to the proposals have to be made so they can proceed.

During the year, the Environmental Assessment Act was prepared for introduction in the legislature.

Environmental Studies—This program is directed toward the analysis of surface water quality and evaluation of the impact resulting from the introduction to watersheds of substances which could alter water quality. Environmental studies have traditionally focussed on concerns relating to acid rain and problems/solutions associated with excess nutrients in lakes. The precipitation chemistry network of five stations across the province is being maintained. The data generated by this study will help evaluate whether reductions in emission of sulphur dioxide in Eastern Canada and New England/New York will provide measurable improvements in the quality of precipitation and lakes.

This program carries out studies to help develop and review provincial government environmental priority areas. This includes, (among others) the assessment and development of a policy for Nova Scotia respecting acid rain based on work conducted on surface water quality over the last ten years. In addition, a program of selective monitoring of general lake and river quality is carried out throughout the province to determine background quality and monitoring changes.

Acid Rain Studies

In February of 1988, Canada and Nova Scotia signed an Acid Rain Agreement. The fulfillment of obligations resulting from the Agreement is a new responsibility for Environmental Studies. A co-ordinated six-point program will be required to meet the terms of the Agreement.

1. Comprehensive monitoring, inventory development and annual reporting of SO_2 emissions in Nova Scotia

2. Monitoring and annual reporting of acid rain deposition

3. Review of current regulations or guidelines for SO_2 emitters in the province

4. Co-operation in environmental impact studies of acid rain effects

5. Co-operation with program development and implementation in other provinces or states

6. Preparation of information kits for public distribution.

Some program realignment and intensification will be required. Field studies include continuation of the acid rain deposition program, participation in a calibrated watershed study of the former Halifax water supply lakes, and development of a multi-agency study of sources for acids in surface waters of the province.

Water Resources Planning Section

The Water Resources Planning Section carries out its programs in two main areas: water resource services and water resources inventory.

Water Resources Services—Provides information and technical assistance to industry, municipalities, other government agencies, and individuals respecting the quality, quantity, use, development, and protection of surface water and groundwater resources. Staff investigate actual and potential pollution problems to ensure the protection of water resources. This includes the review of land uses and water supply development proposals.

Program highlights during the 1987–88 year include:

1. *Review of Development Proposals*—Staff members review the potential effects of proposals on water resources. Included are proposals for subdivisions, industries, mines, exploration, solid waste, highway alignments, and water development. Major involvements during the 1987–88 fiscal year included:

   —Sysco Modernization and the Sydney Tar Ponds Clean-Up

   —Nova Scotia Power Corporation thermal power plant Trenton 6

   —Gold exploration and mining at Tangier, Caribou, West Caledonia, Goldenville, Cochrane Hill, and Fifteen Mile Stream

   —Gypsum mining proposals at Dutch Settlement, Baddeck and MacKay's Settlement

—Coal mining activities at Victoria Junction Reserve and Westville

—Slate quarry near Bridgewater and a Magnitite deposit in Colchester County

—Municipal waste disposal proposals at Metro 101 Mt. Uniacke; County of Cape Breton; Annapolis County; Whynot's Settlement, Lunenburg County; Kenlock and River Denys Inverness County.

—Septic disposal Dingwall, Victoria Co., and Sewage disposal Westville

—Highway Reviews on Highway 101 near Meteghan; Highway 107 near Porters Lake, the MacGregor Ave. extension Stellarton, and the Liscomb Santuary Rd. near Sheet Harbour.

2. *Water Quality Interpretation*—Staff provide water quality information, analysis interpretation, and remedial recommendations. During 1987–88 major time commitments were made to a number of investigations:

—Hydrocarbon, Morton Road, Milton, Queens Co.

—Water Quality, Hardwood Hill, Pictou Co.

—Waste disposal sites at Wallace, Cumberland Co. and Portapique, Colchester Co.

—Continued P.C.E. investigation in Truro

—Continued monitoring of groundwater at Canning and MacDonald Road near Amherst

—Dewater from highway construction in Sydney River

—Blasting complaints near Aulds Cove, Guysborough Co.

—Major water discharge in Reserve, Cape Breton Co.

In addition as many as 700 individuals were assisted with general water quality and water supply inquiries. Of these, approximately 50 investigations were associated with road salt complaints forwarded from the Department of Transportation. The second major source included about 25 hydrocarbon contaminations.

3. *Water Supply Assessment*—This includes assessments of existing water supplies and water resources potential evaluation of quantity, testing and processing of groundwater withdrawal applications. During 1987–88 major involvements included:

   —Advice provided to the municipalities or communities of Amherst; Truro; Springhill; New Minas; Annapolis Royal; Sydney; Liverpool; Pictou; Argyle; and Lower South River, Antigonish Co.

   —Water production developments in Whitney Pier; Weymouth; Greenwich, Kings County; Cape Dauphin, Victoria Co.; Marble Mountain, Inverness Co.; Town of Trenton; Village of Little Narrows; and the Devco Prince Mine.

   —Assistance was provided to Government Services for projects in Bridgewater, Westville, Beaverbank, Caledonia, Freeport, Dollar Lake, Lawrencetown, Rainbow Haven, Valley, Colchester Co.; Floral Heights, Sydney River; and Scotsburn.

   —Review of watershed studies for Middleton and of the Sydney River watershed.

Water Resources Inventory—Staff carry out surface and groundwater investigations to evaluate provincial water resources for protection and as a source of supply. This includes collecting basic data pertaining to water levels, flows and quality necessary for sound development planning, environmental assessment and water resources management. The province cost-shares with Canada the stream gauging network throughout the province. The province maintains its own groundwater level measuring network.

The inventory function includes obtaining, organizing and making available information about provincial water resources. Water managers need to know this and must have the knowledge and understanding of the resource to make decisions on its use that will benefit all the people of Nova Scotia—owners of the water.

A federal-provincial water quantity survey agreement enables stream gauges to be operated and has made possible a review of the water resources networks in the province. This resulted in plans for integrated water quality and quantity surveys including surface and groundwaters. Actions taken this year are consistent with the recommendations of the review report.

- Decisions were made to construct and operate two new stream gauges on small streams near the Atlantic coast. This class of stream is not well represented in the existing network, although they are numerous and each could possibly supply a town or industry's needs. The stations will be placed at Halfway Brook, east of Sheet Harbour, Halifax County, at Blue Hill Bog Brook and east of Jordan Falls, Shelburne County.

- Observation wells were completed and placed in operation at Meteghan, East Jordan Falls, Halfway Brook, Stillwater and North Grant. These were in the bigger gaps of the network. Two more wells were drilled but are not yet complete with instruments, due to technical complications.

- A data management system for well logs, reports on wells drilled by water well contractors, was developed and tested. Twenty-four thousand unpublished logs can now be tackled since the system is operational. Another 25,000 logs, published in the years 1965–1978 may be added in a further stage.

- The networks of stream gauges, observation wells and, to a lesser extent, weather stations were reviewed and a five-year action plan for improvements was adopted by the federal/provincial Water Quantity Agreement Administrators. The planned actions include: office studies such as determination of index stations that represent area flow conditions, field work such as surveys and construction of stream gauges and administrative measures such as improved planning and public relations arrangements.

- A decision was made to cease operation of the North Little River stream gauge since the new data it could provide would likely be of little value. This station has a history of 15 years, and the stream flow is regulated artificially.

- Contributions were made to a five-year plan for data management by computer within the department. At the same time attention was directed to the matter of systems to manage water resources data additional to well logs. The large amount of data on quality, quantity, locations, users (authorized and not) seems to require a comprehensive approach and system if we are to make full use of it. The problem is being approached in co-operation with other government departments and agencies.

Water Management Section

The Water Management Section has two main program areas: reviewing water rights and watershed management. This section issues approval permits for watercourse alteration, subject to government regulations and guidelines. It also recommends licenses to allocate the withdrawal of water for individual, municipal, industrial, agricultural and other uses. In addition, staff investigate complaints, recommend solutions and enforce requirements under the Water Act. The section co-ordinates water use and watercourse alteration permits with appropriate provincial and federal agencies.

The Water Management Section has two main program areas; reviewing and making recommendations on applications under the Water Act, and watershed management. Applications under the Water Act may be processed as a license to use water from any surface or groundwater source, or a permit to do work in a stream, or alter a stream channel.

The purpose of the water license is to allocate the resource between competing users. Licenses are issued to any large water user ranging from an individual property owner to our largest corporations. During the 1987/88 fiscal year 73 applications were received for water use licenses. The proposed uses were as follows: industrial 18, aquaculture 10, farming purposes 11, Ducks Unlimited dams 10, municipal use 5, bottling water 4, the department's Utility Division 10, and 5 for various other users. In total 421 applications under the Water Act were received during the year. The remaining 348 applications were for permits to work in a stream, or to alter a stream channel. The most common requests were for culvert and bridge installations, but a number of individuals wanted to remove rocks or gravel, straighten a section of stream, or install fishing gear.

The section also processes applications from forest operators and private woodlot owners wishing to install bridges or culverts on forest access roads. The section received 231 such applications and most of them were processed during the year.

The section also investigates a number of complaints from the public concerning damage to watercourses. Many such complaints are associated with erosion causing siltation of the stream, illegal alterations to a watercourse, and infilling around the shores of lakes.

During the year no watersheds were designated as protected water

areas under the Water Act, but work continued on designations for the towns of New Waterford, North Sydney, Liverpool, Mahone Bay and Antigonish.

FIELD SERVICES DIVISION

The Field Services Division is responsible for conducting inspections and monitoring programs. It provides a wide range of investigative field activities as required by the department in support of environmental protection.

The division has five main areas of responsibility: solid and hazardous waste inspection, air quality evaluation, water pollution control, water well management, and watercourse engineering and maintenance.

Solid and Hazardous Waste Inspection Section

The Solid and Hazardous Waste Inspection Section is responsible for an on-going inspection and monitoring program of municipal, industrial and private solid waste disposal site practices. The section is also responsible for the inspection of areas contaminated by oil or hazardous material.

The section reviews and appraises contingency plans with respect to accidents involving the handling and storage of gasoline and associated products, and offshore drilling production.

During the year, the section implemented the department's Petroleum Storage Regulations. They are the most comprehensive to be developed thus far, and provide for mandatory tank registration, installation specifications, stringent design standards and mandatory tank upgrading and reporting of leaks.

In the previous year the section was involved in a major chemical warehouse fire in Canning, Nova Scotia. The department was subsequently invited to make presentations on its role in the response and cleanup to various government, industry, and academic groups across the country.

The section was also involved in the gasoline leak which resulted in the evacuation of 700 people from the western section of the Halifax peninsula. The section's role was in tracing the source of the leak and advising the city of the potential impact on adjacent residents and householders.

Spill Reports and Complaints

Petroleum Spills	371
Other Hazardous Materials	59
Solid Waste Dumping Complaints	38
TOTAL	**468**

The section's hazardous material response training program for fire, police, and municipal officials continued into its fourth year and addressed many fire departments across the province.

Air Quality Evaluation Section

The Air Quality Evaluation Section is primarily responsible for:

—gathering air quality data in various areas of the province

—measuring pollutants such as sulphur dioxide, nitrogen oxide, ozone, carbon monoxide, suspended particulate and radiation levels

—operating and maintaining an ambient air monitoring network in the vicinity of the Lingan Thermal Power Plant

—handling complaints from the public concerning air, noise, odour or related problems

—developing guidelines to assist industry in maintaining ambient air quality

—undertaking monitoring studies for existing or proposed industries

—assisting with stack emissions, testing of industrial sources.

Three major ambient air monitoring networks continued to operate in the Sydney-Glace Bay, Strait of Canso, and Halifax-Dartmouth areas.

Major Program Activities and Highlights—The Air Quality Evaluation Section was responsible for the operation of three major ambient air monitoring networks in Halifax-Dartmouth, Port Hawkesbury, and Industrial Cape Breton. Two single-air monitoring stations were also operated, one in Pictou and one in the Valley near Kentville. A total of 22 continuous air quality monitors were operated as well as 16 total suspended particu-

late monitors (high volume samplers). Monitoring was done primarily for sulphur dioxide through nitrogen dioxide. Carbon monoxide and ozone were monitored in Halifax-Dartmouth. Hydrogen sulphide was monitored in Port Hawkesbury and ozone was monitored in the Valley near Kentville. The telemetry system was expanded so that most ambient air monitors in the province are now reporting to the central station by telephone line.

A total of 322 complaints or inquiries concerning air or noise pollution were handled in 1987. This represents a 48% increase over 1986. The breakdown of these complaints is as follows:

Source Category	Number of Complaints
Thermal Power	4
Refining	13
Hospital Incineration	7
Rendering	13
Oil Ring (painting)	23
Sandblasting	15
Open Burning	24
Noise	10
Odour/Fumes	48
Wood Stoves	8
Smoke/Soot	33
Miscellaneous Sources	69
Inquiries	46
Universities	9
Total	**322**

Other Activities—The Air Quality Evaluation Section evaluated the operation of a number of hospital waste incinerators and made recommendations for improvement. A representative from the section assisted in the development of a guideline for handling biomedical waste. As well, a guideline for the incineration of biomedical waste was developed by the section.

A draft guideline for municipal waste incinerators was developed and assistance was given in the development of a proposed Waste Oil Regulation.

A Ministerial Control Order was issued to control a grain dust problem resulting from a ship unloading problem in south-end Halifax.

At the request of the department major modifications were carried out on number 3 open hearth furnace at Sysco to enable it to burn coal tar in an environmentally satisfactory manner.

An ambient air monitoring study was undertaken to evaluate air quality in the vicinity of the International Pier in Sydney. Just prior to and during the period when the coke ovens were shut-down the department assisted in the gathering of air quality data to establish background levels of PAH before the ovens were shut-down.

An air monitoring study was undertaken in Westville to assess the impact of an open-pit coal mine which started operation.

The Air Quality Evaluation Section provided departmental representation on committees to oversee the environmental aspect of Phase II of the Sysco Modernization Plan and the Tar Pond Clean-Up Project. A representative also attended the annual meeting of the federal/provincial Advisory Committee on Air Quality and assisted in presenting a paper on the greenhouse effect associated with increasing CO_2 levels.

Assistance was given to our Media Relations Section in arranging for widespread public distribution of a "cheque stuffer" on automobile emissions. As well, an advertisement was placed in a local publication encouraging better use of woodstoves in the home.

Water Pollution Control Section

This section is responsible for promoting the proper operation of wastewater treatment facilities to achieve effective pollution control of raw sewage. It is also responsible for training operators, inspecting sewage treatment plants (municipal and industrial) and for responding to complaints related to water pollution and environmental degradation.

The section has 11 permanent staff, usually employs up to six additional staff during the summer months, and is spread throughout the province, with offices in Yarmouth, Sydney, Truro, Middleton, Pictou, Port Hawkesbury, and headquarters in Halifax. The primary task of the section relates to controlling, reducing or monitoring water pollution and stopping or preventing environmental degradation.

Because the section is spread out in various field offices, personnel from this section regularly become the first contact the public has with the Department of the Environment, and are approached with various

complaints and requests. These are usually given preliminary evaluation and comment before being passed on to Halifax, if necessary. The section received over 2,000 telephone inquiries during the year.

Personnel from the Water Pollution Control Section inspect the operation of water and wastewater treatment plants in the province. They examine whether they are performing up to the standards specified when the application was made and subsequently approved by the Minister. In the event that significant deviation is identified between what is required and what is being achieved, a formal evaluation is carried out. The owner is informed either through formal advisement or Ministerial Control Order that changes in operation, significant revisions and/or improved equipment is required. A deadline for the indicated action is set. Any variances from the terms and conditions imposed upon the owner in this manner are subject to prosecution under the terms of the Water Act or the Environmental Protection Act.

The field offices provide first line emergency response and follow-up inspections on emergency problems as required on oil spills and hazardous materials spills.

Over 50 industries or municipalities in the province are required to do self-monitoring of various parameters and effluents, and report the results to the section. Results are evaluated, and follow-up, re-inspection, or standards upgrading may be indicated.

In co-operation with the Environmental Protection Service of Environment Canada this section conducts a program, internally called FED-SAMP. Over 40 industrial pollution discharges are sampled with the laboratory analysis done by the EPS Laboratory. The results are made available to both departments. When a problem is identified an appropriate response is undertaken.

The field offices provide laboratory services to owners and operators of treatment facilities in their areas.

The section participates in the Atlantic Canada Voluntary Certification Program for Municipal Water and Wastewater Facilities, Water Distribution Systems, Wastewater Collection Systems, and the operators. Nova Scotia Operators who pass the training and testing program, are equivalent to operators who pass similar requirements in the United States and other provinces.

The section supports the Maritime Provinces Water and Wastewater Operators Association, through participating in their Annual Training Seminar. In conjunction with the Department of Health the section offers various training programs and an annual operators' school. Last year over 120 operators took advantage of various training opportunities. In addition, 150 persons attended the Operators' Seminar at Moncton in April.

Personnel from the section participated in the formation of The Clean Nova Scotia Foundation. The department supports the aims and objectives of the Foundation both financially and by providing staff resources for the program committee, the recycling committee and the Board.

The section carried out the first province-wide recycling program for non-refillable containers in Nova Scotia. Thirty-five depots were authorized to act as return points for glass bottles and aluminum cans. A sum of one cent was refunded to customers who returned containers to the depots. The project took in over two tonnes of aluminum and over 80 tons of glass. This translates into roughly 100,000 aluminum cans and over 400,000 glass containers. The depots were mostly operated by members of the Nova Scotia Bottle Dealers and Recyclers Association. Public support was very positive. The project was run concurrent with Environment Week 1987.

Personnel from this section were instrumental in the start up and implementation of the Departmental Management Indicators System, which was instituted in January 1988.

The section carried out, with the Metropolitan Area Planning Commission (MAPC), and CBCL, the first in-depth look at actual sewage discharges from Halifax and Dartmouth, and also carried out long term flow monitoring programs on various treatment facilities, including all County of Halifax Trailer Parks.

Personnel from the section identified the areas in the province which required wastewater treatment plant upgrading, or required waste treatment, and investigated several illegal discharges of manure into watercourses.

In the attached table, (1) the number and distribution of the various wastewater treatment plants which are inspected under our regular program are given.

The attached table, (2) gives a breakdown of some of the work time by the section in 1987/88.

TABLE NO. 1

Water Pollution Control Facilities, Nova Scotia—1987/88

County	Municipal	Industrial	Totals
Annapolis	8	2	10
Antigonish	9	0	9
Cape Breton	19	9	28
Colchester	17	3	20
Cumberland	19	2	21
Digby	9	0	9
Guysborough	9	0	9
Halifax	71	10	81
Hants	21	0	21
Inverness	20	0	20
Kings	14	3	17
Lunenburg	28	2	30
Pictou	19	2	21
Queens	9	0	9
Richmond	7	5	12
Shelburne	9	0	9
Victoria	12	1	13
Yarmouth	10	1	11
Totals	**310**	**40**	**350**

All waste treatment facilities are monitored on a regular basis, the schedule varies with the sensitivity of the discharge situation and the size of the facility.

TABLE NO. 2

Water Pollution Control Operations

Staff Full Time	11
Summer Students	6
Inquiries	2,100
Inspections	1,600
Investigations	700
Samples Taken and Submitted	3,000
Technical Assistance Provided (instances)	1,000
Control Orders	1
Successful Prosecutions	3
Fines Collected	$3,000.00

Water Well Management Section

The Water Well Management Section is responsible for administering the Well Drilling Act and for associated enforcement/inspection activities. The Well Drilling Act requires that all well construction contractors operating in the province be licensed. Also, the Act provides a Well Drilling Advisory Board made up of representatives from the well drilling industry and other government departments to advise the Minister of the Environment on matters pertaining to well drilling in the province.

The Water Well Management Section, through regular inspections, activities and response to complaints, strives to ensure that the public receives high quality well construction. High standards of workmanship are ensured by sponsoring courses at well drilling schools and through technical programs at conventions. About 50% of the province's population depend on wells as their source of water.

The Water Well Management Section has assisted on several large water well construction projects in the past year including the: Town of Amherst, Town of Springhill, Town of New Minas, and several large fish plants. Water wells have been constructed and pumping tests carried out for the Nova Scotia Departments of Lands and Forests, Housing, Transportation, along with various hospitals, farms, and senior citizen buildings.

The Water Well Management Section is now using a new mapping report form system which will be invaluable in obtaining more concise information from water well contractors. Staff have also been involved in several interprovincial and intergovernmental meetings, concentrating

on new construction methods, new equipment, and water well contractor training.

An Atlantic Canada Training Seminar for water well contractors was planned for September 1988 at O'Leary, P.E.I. and many Nova Scotia contractors attended.

In May 1988 the Canadian Water Well Association National Convention and School was held in Halifax. The General Chairman and the Technical Chairman for the convention were staff members from this section.

The Nova Scotia Well Drilling Advisory Board is considering a licensing program for pump installers in the province and a joint water well contractor training program in co-operation with the Province of New Brunswick. As well, the Advisory Board has finalized changes to the Well Drilling Act and will now submit those changes to the appropriate officials for review.

STATISTICAL REPORT

Water Well Drilling in Nova Scotia
1987

Number of Wells Drilled

Observation	7
Industrial	33
Public	11
Domestic	3140

Number and Kinds of Equipment in Full or Part-time Use

Cable	30
Rotary	42
Backhoe	51
Jetting	1
Diamond	nil

Number of Men Employed Full or Part-time 236

Pump Tested Assisted On 26

Number of Accidents, Including Diamond Drilling

Fatal	0
Compensable	4
Medical Aid	N/R

Licenses Issued

Drilling	53
Backhoe	54

Complaints and Inquiries in Writing

Complaints	117
Inquiries	214

Note: In addition to this, phone calls and personal visits responded to during the year totalled over 600.

Water Samples

Well and Stream	143

Environmental Engineering Section

Situated in Truro, the Environmental Engineering Section provides regional response to environmental concerns, complaints and inquiries. These include oil spill response and containment, clean-up and investigation of complaints on watercourse degradation, odour problems, flooding monitoring, ice and snow sampling, and coastal erosion concerns.

The primary function of the section is the delivery of the cost-shared Streambank Protection Program, the 100% provincially funded Stream Maintenance Program, (province-wide) and the completion of environmental engineering projects in response to emergencies and resource restoration requirements.

A total of 63 cost-shared applications were carried over from the 1986/87 fiscal year under the cost-shared "Streambank Stabilization & Protection Policy." An additional 29 applications were received during the fiscal 1987/88.

a) A list of work under the cost-shared Streambank Stabilization Protection Program for the period is outlined by number of sites per county with total costs.

County	No. of Sites	Total Cost
Colchester	4	$13,440.88
Cumberland	2	4,514.82
Inverness*	7	14,161.05*
Pictou	2	6,143.91
Victoria	1	1,571.76
Total	**16**	**$39,832.42**

*One site was only partially completed.

A total of $9,418.50 was received as twenty-five percent share from landowners.

b) The 100% provincially funded Stream Maintenance Program involved the completion of three major river reconstruction projects on three rivers in central Nova Scotia and are outlined below.

Debert River, Await Site **$18,893.12**

A section of channel, approximately 1500 feet in length, had to be reestablished and reinforced downstream from the Soley Factory Bridge. Flow was diverting from the original channel causing erosion and environmental damage to adjacent interval lands and creating downstream alignment stability problems. (The project as completed to date is considered as Phase I with Phase II being the continuation of the work downstream). Approximately 1500 tons of rip-rap and 500 yards of fill were used in this year's project.

Salmon River, Gates Site **$25,358.98**

An exceptionally wide section on the Salmon River was narrowed and stabilized to correct a serious bank erosion and alignment problem in the vicinity of Gasper Lane. This location also contributes to ice jam problems causing flooding concerns for adjacent agricultural interval land and area residents. A large stockpile of gravel, located on the true right bank of the river as a result of removal of an "island" in the late 1970's was moved across the channel to reconstruct and realign the eroded left bank. This bank was then stabilized with approximately 1200 tons of rip-rap. The project improved an approximate 1400-foot section of channel.

Stewiacke River **$37,709.14**

Improvements on a 4500-foot reach of the Stewiacke River were completed to provide a stable channel to alleviate erosion and alignment problems adjacent to a large agricultural interval land base. Ice jams frequently occur in this channel section resulting in overland flooding/erosion conditions. This reach was identified by local residents as an area of concern in 1981. Stream maintenance work was carried out over the years since 1981 and the work this past year finishes the scheduled instream channel modifications. The project this year included channelization, alignment and reinforcement of an 850-foot section of the river in the vicinity of the Cox Brook confluence, the stabilization of numerous eroding banks upstream, and the shaping of three gravel bars. A total of approximately 3750 tons of rip-rap was placed for reinforcement purposes this past year.

c) Staff of this section also completed a number of "environmental engineering projects" as outlined below:

Frances Atkinson Pty., Drainage Improvements, Hillcrest Avenue, Bible Hill, N.S. **$435.36**

In response to concerns over local drainage, a small section of brook channel (tributary to Farnham Brook) was reconstructed between the Atkinson and Halverson properties on Hillcrest Avenue, Bible Hill.

102 Maple Blvd., Bible Hill, Lloyd Shipley Pty. **$4,446.60**

A severe property erosion problem was corrected at 102 Maple Blvd. through the diversion of storm water run-off to an established watercourse. Approximately 250 feet of corrugated metal pipe was installed complete with an outfall structure to alleviate the problem. The drainage network became the property and responsibility of the N.S. Department of Transportation upon installation.

Fred Davidson Pond, Habitant Creek, Kings County **$624.00**

Final dress up of spoil piles and grading was completed in the spring of 1987 on the Davison property around the new pond and control structure which was constructed by this department in 1986.

Campbell Cemetery, Seafoam, Pictou County **$55,781.73**

Public outcry over the loss of graves to the wave action of the Northumberland Strait led to protection of this cemetery with a quarry stone revetment. A sea wall of approximately 450 feet in length was constructed to protect the exposed frontage of Campbell Cemetery from further erosion.

Reid's Cemetery, Black Point, Pictou County **$32,671.24**

A quarry stone revetment was also constructed in front of the Black Point Cemetery to prevent loss of more graves to the seas. Approximately 280 feet of protection was required along the bluff on which the graveyard is located.

Turner Brook, Harbourville, Brook Restoration **$1,957.19**

Following destruction by a forestry harvesting operation, approximately 2000 feet of Turner Brook and a tributary stream were restored. A powersaw crew supported by 12 labourers removed slash and hand cleaned the brook channel and reconstructed pools to re-establish the trout fishery.

Webster Street, Kentville, Contaminated Soil Containment **$1,531.89**

A seven-man work force of the Field Services Division levelled and covered approximately 250 cubic yards of pesticide contaminated soil with an impermeable membrane on Webster Street in downtown Kentville. The material had been removed from the basement of a former Scotian Gold Warehouse during a renovation process. Webster Street is located adjacent to the Cornwallis River and the spoil piles could leach to it if left uncovered.

UTILITIES DIVISION

This division is responsible for the operation and management of all provincially owned industrial water supplies and waste treatment facilities. These utilities provide necessary services to major industries in the province, including fish processing plants and pulp and paper mills.

The division is also responsible for identifying and protecting potential industrial and municipal water supplies and for designing, installing, and recommending major renovations and alterations.

The division operates and maintains eleven water supply stations, one domestic sewage treatment plant and one industrial waste treatment facility.

Water pumping stations include salt water supply plants at Grand Etang and Lockport, fresh water supplies at Cheticamp, Port Hawkesbury, Canso, Pictou, Chester, Riverport, Lockport and Middle and Lower East Pubnico. A treated fresh water supply system is maintained in Lockport.

Capital projects during the year included:

Re-construction of a section of pipeline at Middle River in Pictou County.

Construction of spillway bypass and control at Little River, Inverness County.

Stabilization of sections of the Melford Brook Dam, Guysborough County.

Modifications to the Hayden Lake Treatment Plant, were begun at the Shelburne County site.

ADMINISTRATION AND FINANCE DIVISION

The Administration and Finance Division provides executive management, administrative financial support and central support sources to the three operations divisions of the department. The three activity centres include:

Office of the Minister and Deputy Minister—Provides executive management to the department, liaison with municipal, provincial and federal agencies and provides recommendations to the Provincial Cabinet on environmental policies and legislation.

Information and Education Services—Provides a co-ordinated departmental liaison with the public and the media. They promote public awareness of environmental issues through an education program and answers inquiries.

During the fiscal year this section answered numerous inquiries from students throughout the province. In addition numerous requests were answered from members of the public looking for information on environmental issues.

The section assisted with the public review of the draft pesticide regulations by handling distribution of the proposed regulations and by providing a contact person for phone inquiries.

Staff in this section provide a research co-ordinator and secretarial services to the Environmental Control Council which includes setting up all meetings and maintaining files for the ECC. This section provides a staff person to sit on the Information Sub-Committee for the clean-up of the Sydney Tar Ponds. The project calls for a federal/provincial five-year communications plan to ensure that public questions regarding the clean-up are answered.

This section is also responsible for co-ordination of all Environment and Acid Rain Week activities. This includes membership on a federal committee established to allocate federal funding for Environment Week projects.

Staff in this section maintain inventory for the department. This inventory deals with all public information materials.

This section offers advice to the following:

Environmental Control Council

Clean Nova Scotia Foundation

Litter Abatement Task Force

Other government departments when requested

In the fiscal year, this section organized and now maintains a speakers bureau. It ensures that staff members are identified who are able to speak on various subjects. This ensures that outside requests for speakers on environmental issues are met whenever possible.

Administrative Support Services—The administrative and financial support functions which this activity provides to the department include: accounting, personnel, central filing, central stationery and inventory control, as well as day-to-day management of the operations of the office facility and its equipment. Also, a specialized environmental library-research facility is maintained for use by educational institutions consultants, industry and other government agencies.

GENERAL

Environmental Emergencies

In Nova Scotia, all oil or chemical spills must be reported to: **426-6030** in the Halifax/Dartmouth metropolitan area, or **ZENITH 49000** elsewhere in the province. These reporting numbers connect to the 24-hour operator at the Canadian Coast Guard Traffic Centre in Dartmouth, fulfilling the legal reporting obligations of all the environmental regulatory agencies.

The Nova Scotia Department of the Environment co-operates with all other provincial and federal departments to ensure a co-ordinated and integrated response to all spill incidents. The department's involvement varies depending on the spill circumstances for designating disposal sites and debris disposal procedures.

Nova Scotia Environmental Control Council

The Environmental Control Council is a 12–15 member citizens' advisory

board that gives advice to the Minister of the Environment and represents the interests of the environment and general public in resource decisions. Under the jurisdiction of the Environmental Protection Act, membership includes representation from health, law, engineering, industry, labour, municipality, conservation or ecology groups, agriculture, academic forestry and fisheries. The Council is supported by an Executive Secretary. The Deputy Minister of the Nova Scotia Department of the Environment as an ex-officio member.

The council offers annual awards in recognition of outstanding environmental service in seven categories: individual, groups, organizations, education, youth, government, and industry. Details about the Environmental Awards program, activities of the council and a copy of its annual report can be obtained by contacting:

The Executive Secretary
Nova Scotia Environmental Control Council
P.O. Box 2107
Halifax, Nova Scotia
B3J 3B7
Phone (902) 424-5300

Well Drilling Advisory Board

An industry/government advisory board has been established under the Well Drilling Act to provide advice to the Minister on regulations and standards for the industry. The board meets on a regular basis respecting well drilling and related problems. It also helps the department examine applications and qualifications, and makes subsequent recommendations for licensing under the Act.

Advisory Groups

Petite Riviere Watershed Advisory Group
Queens County Medway-Mersey Watershed Advisory Group
Sable Island Advisory Committee

Committees, Meetings, Education and Technical Seminars

— Staff at the Nova Scotia Department of the Environment were involved in a number of committees during the fiscal year, giving representation and presentations.

The Nova Scotia Well Drilling Advisory Board
The CCREM Water Advisory Committee
The Associate Committee on Hydrology
Federal Provincial Committee on Groundwater and Pesticides
Interdepartmental Committee for co-ordination between the Department of Health and of the Environment
Sludge Disposal Committee
Septic Effluent Guidelines Committee
In House Development of Guidelines for highway construction
State of the Environment Committee
Tar Ponds Public Information Sub-committee
Canadian Environmental Information and Education Committee
Flood Risk Damage Reduction Committee
CCREM Information Committee
Federal Environment Week Committee
Climate (Issues) Advisory Committee
Recreation/Committee of Water Issues
Provincial Chairman of the Program Management Group
Senior Advisor to the Management Committee in charge of the Tar Ponds Clean Up Project
The Deputy Minister's Land Use Committee's Water Issues Group on Topics of Municipal Water Supply Protection, Flood Risk Lands, and Recreational Water Use
The Nova Scotia Medical Society's Environmental Health Committee

— Section staff in conjunction with staff from the Federal Department of Fisheries and Oceans prepared a half-day seminar to be given to Department of Transportation and Communication engineers, foremen and workers involved in maintenance work near watercourses. The seminars will be given at 13 Department of Transportation and Communication offices throughout the province.

— Addressed the Atlantic Provinces Environment Ministers Conference on the Sydney Tar Ponds Project.

— Provided resource material for several speakers involved in educational programs.

— Several meetings of the Environment Committee of the New England Governors' and Eastern Canadian Premiers' Conference—the most notable result of the group is the production of an Acid Rain Sensitivity Map to be released in June of 1988.

— The Steering Committee of the Canadian Environment Ministers' Long Range Transportation of Acidic Precipitation program was held in 1987–1988—The committee has initiated discussions on acid rain prospects for the long-term future.

— Dozens of requests for information about acid rain were mailed out. Students with school projects were the most frequent inquiries.

— Requests for lectures/talks were uncommon in 1987–88. We did present a poster of some of our field research at international symposiums in Bedford and in Norway.

— The International Association of Hydrogeologists Symposium and Canadian Water Well Industry Conference—preparation for May 1988.

Studies, Reports, Publications, and Contributions to Outside Journals

During the year staff completed work on an "Erosion and Sediment Control Handbook" for construction sites and it was being printed at year end.

Lake Nutrient Studies—As increasing numbers of people seek lakeside retreats from busy work schedules, pressures on our aquatic resources result in inevitable changes in water quality. Thus, intense growth of alga or large pond-weeds occurs with increasing frequency in Nova Scotian lakes. In 1986–87, Environmental Studies completed an evaluation of sources for nutrients in a lake near Antigonish. Recommendations for treatment were proposed. The most viable, albeit interim, solution is in-lake nutrient inactivation by alum. This will be attempted in 1988. The chemical is commonly used in drinking water treatment plants, and is both readily available and inexpensive.
—A comprehensive review of control options for water weeds is near completion. This will provide guidance on chemical, physical and biological control techniques used in other provinces that may provide relief to cottage owners in Nova Scotia.

Presented a paper on the Environmental Impacts of the Mining and Steel sectors of Nova Scotia to the Mining Society of Nova Scotia.

Leydon, J.J.; Mining and Steel Production in Nova Scotia—Environmental Impacts. Paper presented to the One Hundredth Anniversary of

the Mining Society of Nova Scotia, Keltic Lodge, Nova Scotia, May 1987.

Leydon, J.J.; Steel Production in Nova Scotia—Environmental Impacts. Talk delivered to the Atlantic Canada Environment Ministers Conference, Digby Pines, Nova Scotia, August 1987.

CANADA-NOVA SCOTIA FLOOD DAMAGE REDUCTION PROGRAM

In June 1978, the province entered into a five-year joint Canada-Nova Scotia Flood Damage Reduction Program. It is funded equally with the federal government under the Canada-Nova Scotia General Agreement Respecting Flood Damage Reduction along with two subsidiary agreements respecting flood risk mapping and studies. The general agreement expires in June, 1994 with the subsidiary agreements expiring June, 1989.

This program includes: attempts to reduce damage caused by flooding in Nova Scotia, conducts flood risk mapping to identify flood prone areas, studies flooding problems to determine the cost of remedial methods and recommends measures to reduce or prevent damage, and provides information to the public to ensure safety and restrict private and public development in flood prone areas.

The program is supervised by a Steering Committee appointed by the provincial and federal Ministers of the environment. A technical committee consisting of representatives from several federal and provincial departments oversees mapping and remedies studies which are usually done under contract by consultants. A joint federal-provincial public information committee is responsible for the publicity program.

Highlights for the fiscal year 1987–88 were: the completion of the flood risk maps for the Truro and Colchester County areas, and the designation which became effective March 31, 1988; the completion of the flood risk maps for the Little Sackville River area, Halifax County and the designation which became effective May 29, 1987.

The following is a brief summary of the policies the federal and provincial governments have agreed to apply to floodway and flood risk areas in designated areas: the governments have agreed that no financial support should be given for the construction, erection, extension or alteration of any structure in the floodway, other than the structure for agriculture use or an open-air building or other structures for recreational use; financial support should only be given for new undertakings in the

remainder of the flood risk area if adequate flood proofing techniques are incorporated in the design or construction; flood disaster assistance may not be available for new undertakings in designated flood risk areas; municipal governments will be encouraged to zone areas based on the flood risk maps to ensure the land in these areas is used in the most appropriate manner.

Information about the program and reports can be obtained by contacting:

Environment Canada
Inland Waters Directorate
4th Floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6
Phone: 426-3266

Nova Scotia Department
of the Environment
5th Floor
5151 Terminal Road
Halifax, Nova Scotia
B3J 3B7
Phone: 424-5300